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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,812	03/18/2004	Lee Begeja	2003-0059 (ATT.0180000)	5880
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/802,812

**Applicant(s)**

BEGEJA ET AL.

**Examiner**

QI HAN

**Art Unit**

2626

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 April 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 17-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Response to Amendment***

2. This communication is responsive to the applicant's amendment dated 04/14/2010. The applicant(s) amended claims 1-2, 4-8 and 17-20 (see the amendment: pages 2-4).

The examiner withdrew the previous claim rejection under 35 USC 112 1<sup>st</sup>, because the applicant amended the corresponding claim(s). However, it is noted that the supporting contents (i.e. specification: paragraphs 1078-1080, corresponding to Fig.11) for the amended limitations provided by the applicant (see Remark: page 3, paragraph 2) appear not to be the same embodiment as claimed, which causes the difficulty or confusion for examining the claims from one amended version to another. Therefore, the applicant is required to clearly indicate or explain which embodiment (such as figure(s)) the amended claim corresponds to, in future amendment/response.

#### ***Response to Arguments***

3. Applicant's arguments filed on 04/14/2010 with respect to the claim rejection 35 USC 103, have been fully considered but are moot in view of the new ground(s) of rejection, since the amended claims introduce new, issue which change the scope of the claims. Accordingly, the

response to applicant's arguments based on the newly amended claims (see Remarks: pages 5-6) is directed to the claim rejection with necessitated new ground(s) (see below).

***Claim Rejections - 35 USC § 103***

4. Claims 1-3, 5-6, 8-11, 13-14 and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over ARAI et al. (US 6,173,261) hereinafter referenced as ARAI (including inherent characteristics: see ARAI: col. 1, lines 61-57, US patent application No. 08/893,888 (now US 6,173, 261) hereinafter referenced as ARAI2, 'hereby incorporated by reference in its entirety') (see MPEP 2131. III), in view of ATTWATER et al. (US 6,839,671) hereinafter referenced as ATTWATER.

As per **claim 1**, ARAI discloses 'grammar fragment acquisition using syntactic and semantic clustering' (title) 'for recognizing and understanding fluently spoken languages' (abstract), comprising:

"collecting a plurality of unlabeled utterances" (Fig. 9, the input 'test speech utterance' of block 110 and/or the input of 'input speech' of block 1110; col. 9, lines 1-8, 'database (collection) of a large number of utterances', which includes inherent features disclosed by ARAI2 (see col. 4, lines 3-45) comprising 'a database of a large number of utterances...' and 'each utterance (unlabeled utterance) is **then** transcribed and **labeled** with one of the predetermined set of routing objectives');

"generating a plurality of call types, each generated call type being based on a first set of utterances selected from the plurality of unlabeled utterances", (col. 2, lines 13-35, 'clustering phrases into grammar fragments' that are associated to the utterances, 'generate a collection of

grammar fragments each representing a set of syntactically and semantically similar phrases' and used to 'determine a call classification (a call type)'; Fig. 9 and col. 9, line 1 to col. 10, line 45, 'a set of candidate phrases (including call types) having a probabilistic relationship with one or more of the set of predetermined routing objectives with which the input speech utterances are associated', 'call-type classification (generating call types)'; the feature is also inherently included in ARAI2: col. 7, line 37 to col. line 24, 'clustering procedure' resulting (generating) 'meaningful phrase cluster' regarding 'call types for phrases (corresponding to the phrase utterances)');

"generating a first natural language understanding model using call type information contained within the first set of utterances"(col. 2, lines 6-9 and 20-35, 'to utilize these grammar fragments (associating corresponding utterances) in language models (interpreted as natural language understanding models) for both speech recognition and understanding', 'salient sequences of these fragments may then be automatically acquired, which are then exploited by a spoken understanding module to determine a call classification'; Figs. 11a-11c and col.10, lines 30-45, 'as a consequence of this expansion, a fully expanded salient fragment network (also corresponding to the first natural language understanding model) is obtained (generated)');

"testing the first natural language understanding model" (col. 9, lines 61-67, 'recognition language model (natural language understanding model)', 'the training transcription contained 7,800 sentences while the test transcription contained 1000 sentences', which implies testing the language model);

Even though ARAI discloses that the grammar fragments formed from candidates phrases that generated from the training transcription (based on the testing) can be sorted based

on call types (col. 6, lines 39-53), ARAI does not expressly disclose “**modifying** the plurality of call types based on the testing” and “**generating a second** natural language understanding model using the modified plurality of call types”. However, the feature is well known in the art as evidenced by ATTWATER who discloses ‘learning of dialogue states and language model of spoken information system’ (title) for creating ‘a dialog model’ using a training corpus of example human-human dialogues (abstract), comprising ‘a natural language call steering system’ in that ‘the received speech utterance is analysed by the recognizer with reference to a language model’ and using ‘semantic model to form a semantic classification’ that provides classifiers according to a predefined set of meanings (corresponding to call types) (col. 3, line 60 to col. 4, line 14), and teaches that ‘the sentences in supervised training corpus 42 are clustered using clustering algorithm’ and ‘clusters thus generated are manually checked’ in which the words/phrases can be deleted or substituted (modified) in forming a cluster (col. 6, lines 1-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize that supervised training with manually checked clusters would provide capability of modifying the clusters/classes for the transcribed data so as to form a different language model, and to modify ARAI by combining the feature of using a candidate set of grammar fragments associating the clustered call-types in the training transcription disclosed by ARAI (col. 3, lines 1-60) and the feature of using supervised training and/or manually checking (or transcribing) clusters with modifying capabilities, such as deleting or substituting, as taught by ATTWATER (col. 6, lines 1-22), so that the call type of the candidate fragments associating the utterances/transcription can be manually modified and another fully expanded salient fragment network (second natural language understanding model) can be generated, for the

purpose (motivation) of generating more accurate transcriptions and/or improving call-type classification performance for the system (ATTWATER: col. 6, lines 30-31; ARAI: col. 10, lines 21-22).

As per **claim 2** (depending on claim 1), ARAI in view of ATTWATER further discloses “generating an annotation guide using a second set of utterances which is a subset of the first set of utterances” (ATTWATER: Fig. 3 and col. 5, lines 13-14, ‘nodes... have been annotated with operator utterance’; col. 11, lines 33-35, ‘each call in the corpus can be annotated according to the cluster of each operator utterance in the call’, wherein the content of labels 26 in Fig.3, such as ‘greeting’, can be reasonably interpreted as generated annotation guide as claimed; ARAI: Fig.11C also suggests that the utterances corresponding to phrase ‘collect call’ (or ‘collect phone call’) is a subset of the utterances of the consequence expansion (the model), so that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings from ARAI and ATTWATER by providing generated annotation (annotation guide) using a subset of utterances of the consequence expansion, for the purpose (motivation) of generating more accurate transcriptions and/or improving call-type classification performance for the system (ATTWATER: col. 6, lines 30-31; ARAI: col. 10, lines 21-22)).

As per **claim 3** (depending on claim 1), ARAI in view of ATTWATER further discloses “generating call type data using at least **one of** data clustering, relevance feedback, string searching, data mining, and active learning tools” (ARAI: Fig. 9, ‘grammar fragment (data) clustering’; ATTWATER: col. 5, lines 61-65, ‘dynamic programming (DP) match (string searching)’).

As per **claim 5** (depending on claim 1), ARAI in view of ATTWATER further discloses “the first natural language understanding model is trained using a first text file containing utterances contained within the first set of utterances and a second text file containing call types assigned to the utterances in the first text file” (ARAI: Fig. 9 and col. 9, line 4 to col. 10, line 45, wherein the ‘database’ with labeled utterances and training transcriptions necessarily include text file/table (first text file) linking (containing) the corresponding utterances, and the phases (text) classified with call types are also necessarily stored in a file or table (second text file) and linked (assigned) to the corresponding utterances; also see Figs. 7A-7C and 11A-11C).

As per **claim 6** (depending on claim 1), ARAI in view of ATTWATER further discloses “the natural language understanding model is tested using a subset of the first set of utterances” (ARAI: Fig. 9, ‘test speech utterance’ and ‘input speech’).

As per **claim 8** (depending on claim 1), ARAI in view of ATTWATER further discloses “the first natural language understanding model is created prior to an annotation guide” (ATTWATER: Fig. 3, wherein the content of labels 26, such as ‘greeting’, is interpreted as generated annotation guide; col. 11, lines 33-35, ‘once the sentences in the training database have been clustered ...each call in the corpus can be annotated **according to the cluster** of each operator utterance in the call’, which suggests the model is created prior to the annotation (guide)).

As per **claims 17-20**, the rejection is based on the same reason described for claims 1-2 and 5-6, because it also reads on the limitations of claims 1-2 and 5-6 respectively.



5. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over ARAI in view of ATTWATER as applied to claim 1, and further in view of MAES et al. (US 2003/0088421) hereinafter referenced as MAES.

As per **claim 4** (depending on claim 3), even though ARAI in view of ATTWATER discloses generating call types, as stated above, ARAI in view of ATTWATER does not expressly disclose “using a graphical user interface (GUI).” However, the feature is well known in the art as evidenced by MAES who discloses ‘application that supports multi-modal’, ‘conversational applications’ utilizing ‘NLU (natural language understanding)’, ‘multi-modal interactive dialog comprises modalities such as speech, visual (GUI)...and a combination of such modalities (e.g. speech and GUI)’ (p(paragraph)46); and ‘multi-modal browser application comprise a GUI browser’ (p73). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify ARAI in view of ATTWATER by combining the feature of generating call types as stated for claims 1 and 3, with feature of supporting multi-modal applications including using GUI, as taught by MAES, for the purpose (motivation) of better disambiguating and understanding the user’s intention and/or displaying the related presenting and updating information (MAES: p46, p244).

As per **claim 7** (depending on claim 1), the rejection is based on the same reason described for claim 4, because the claim recites the same or similar limitation(s) as claim 4.

### ***Conclusion***

6. Applicant’s amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Art Unit: 2626

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Please address mail to be delivered by the United States Postal Service (USPS) as follows:

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to QI HAN whose telephone number is (571)272-7604. The examiner can normally be reached on M-TH:9:00-19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QH/qh  
June 24, 2010  
/QI HAN/  
Primary Examiner, Art Unit 2626